Aden

I appear to have been discretion itself between 1948 and 1951; most extraordinary.

There is one other subject which, although it only indirectly concerned the Legislative Council at first, became later very much an affair of the Legislative Council, about which I shall record my own somewhat short-sighted conduct.

631 In 1945 the Government had raided the Municipal larder and
632 taken over the profit-making Electricity Department and the
[655] equally financially satisfactory Water Department, and at the
[365] same time they abolished the old Settlement Authority and created a Township Authority, which was, in fact, much the same thing as a municipality but with much reduced powers. This latter was a retrograde step with which I personally was never in accord and which was generally resented, and it was not surprising that early in 1948 the newspapers began to clamour for increased powers for the Township Authority or its conversion into a fully fledged municipality. At the same time there began a demand for the election of the Members and one particular section of the Press was loud in pressing for municipal reforms of the most far-reaching character.

641 Now, I was not in favour of elections, believing that the time was not ripe for such a very big step forward and in consequence I found myself at variance with most of the other Unofficial Members of the Legislative Council, who favoured elections in the municipal field of politics, but not necessarily in the legislative field. However, I was not altogether alone in my opposition because Mackawwi felt much the same as I did and one morning he came into the Port Trust Office, shook hands rather limply, sat down and folded one of his long thin legs over the other and said nothing. He looked rather tired and I asked how he was feeling.

"I am not well, I have not been well since I retired from business and gave up my work; that was a very foolish thing to do," he said.

"Have you seen a doctor?" I asked.

"I have seen all the doctors in Aden and most of those in Bombay," was his answer.

"Have you followed their advice?" I inquired.

3:Gt. Brit. . Colonial Office G-3 (1938) 1940 MMI Aden MMI

Most of the dwelling-houses within the Settlement limits are well ventilated and lighted and are satisfactory from a public health point of view. Endeavours are being made to effect an improvement in architectural standards.

There are still a few buildings in Maala and Sheikh Othman where the old type of house exists, but improvement grows every year by demolition and reconstruction, and the majority of the population is comfortably housed.

Water Supply

The water supply of Aden is obtained from six bore-wells situated near the village of Sheikh Othman. The supply for the civil population is pumped into two tanks each of 100,000 gallons capacity, and from these tanks the supply gravitates through a 15-in. main to a storage reservoir of 400,000 gallons capacity at the Isthmus.

The total amount of water raised from these bore holes during 1938 was 136,178,000 gallons. This represents an average daily supply of 647,000 gallons, and taking the population as 47,000 an average of 14 gallons per head per day for all purposes.

The following table gives details of the water used in Aden during the years 1936, 1937 and 1938.

Details of water.	*1936.*	*1937.*	*1938.*
Total water raised at bore-holes.	104,887,000	107,368,000	136,178,000
Total water delivered to Fortress area.	118,429,000	121,980,000	133,513,000
Total water delivered to Military.	23,320,000*	23,671,000	27,564,000
Total water sold for Shipping purposes.	18,489,000	20,704,000	21,273,000
Total water used for gardens	76,951,000	84,383,000	98,087,000
Water unaccounted, for per cent. loss.	32·9 per cent.	23·0 per cent.	21·19 per cent.

* This high figure was due to the extra number of Military temporarily drafted to Aden in 1936.

The increase in the consumption of water for all purposes is due chiefly to the extension of the distribution mains.

Maintenance Work

The majority of the work carried out by the Water and Drainage Department comes under the above heading and includes the following :—

(1) *Pumping plant.*—This comprises five reciprocating and five centrifugal pumps, all of which have been examined regularly and kept in good mechanical order. These pumps work on an average of 12 hours a day, and the supply was not once interrupted during the year.

3 Gt. Brit. Colonial Office G-3 (1938) 1940 MMI Aden MMI

The standby electricity generating set was used once each week and generates enough energy to run two bore-hole pumps, giving approximately 17,000 gallons per hour.

(2) *Reservoirs and Tanks.*—These comprise 11 steel plate tanks and two masonry reservoirs situated over the distribution system.

(3) *New Bore-hole Pump.*—A new type of bore-hole pump, in which both the electric motor and the pump are lowered into the bore-hole and run submerged was purchased and installed in bore No. 3 at a cost of Rs. 11,925.

The pump has not been entirely satisfactory as sand in the water has caused damage to the pump and motor bearings. It is considered that it proved, however, that the supply of water from the bores can be increased, without affecting the underground storage level. During a continuous test of 21 days, 8,976,000 gallons of water were raised from bore No. 3 without lowering the normal rest level.

(4) *Distribution.*—The water-supply to the Fortress was uninterrupted during the year, and no restriction whatever in the use of water was imposed on the general public.

Owing to the Electricity Department being unable to cope with the great demand for energy between the hours of 6 p.m. and 10 p.m. pumping at Sheikh Othman and Isthmus was restricted during these hours. Owing to the existing storage capacity of the reservoirs, this restriction was applied only to the shipping companies refilling their water boats for supplies to shipping during these four hours. In practice very little inconvenience was caused.

(5) *Storage Capacity.*—The present storage capacity of the Waterworks Department is as follows:—

		Gallons.	Approximate total hours Domestic supply.
			hours.
(i) Sheikh—Civil Supply	—	125,000	27
Othman—Supply to R.A.F.		37,000	22
(ii) Fortress	Isthmus —	400,000	48
	Arbour Ridge —	125,000	15
	Crater —	225,000	36
	Tawahi —	96,000	30
Total Storage Capacity		1,073,000	

The total hours supply figures are based on the assumption that in time of emergency the supply to gardens and shipping would be stopped.

(6) *Water Connections.*—The total number of water connections to different premises in Aden is 2,595. The number of new connections made during 1938 was 549 compared with 427 for the previous year.

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325 premises were disconnected, of which 100 were eventually reconnected.

(7) *Other Supplies.*—3,824,000 gallons of bore water were supplied free for flushing sewers and 120,000 gallons for fire fighting and practices.

(8) *Water Analysis—Chlorination.*—Three bacteriological and one chemical analyses of both the raw and the chlorinated water were carried out during the year. The bacteriological analyses all showed very satisfactory results in respect of all the samples for drinking water.

The chemical analysis showed that the water was very similar chemically to that tested in 1935 and 1937. It is noteworthy that the sodium chloride (salt) content has not increased.

The whole of the water supply to the Fortress was automatically chlorinated at Isthmus, the dose being ½ part per million by weight. The water at Sheikh Othman was also sterilized by placing ½ lb. of bleaching powder in each tank every morning.

VI.—PRODUCTION

Veterinary

Condition of Live Stock and Meat.—The condition of the live stock from the hinterland was not up to the usual standard, due to cattle being brought in from famine stricken areas. The condition of the live stock from British Somaliland, particularly sheep and goats, was very good. The quality of mutton was 1st class and beef mid class.

Imports from British Somaliland and Djibouti :—72,180 sheep and goats, 137 oxen, 3 cows, 8 ponies, 1 mules.

Imports from Arabian and Red Sea Ports :—1,319 sheep and goats, 3 milk cows, 13 horned cattle, 11 calves, 3 gumlies.

Imports from the hinterland :—1,229 horned cattle, 617 large calves, 373 milk cows, 8,293 goats, kids and sheep, 34 camels, 13 donkeys, 1 pony.

Export from Aden :—3,748 sheep and goats, 20 horned cattle, 18 large calves, 32 camels, 1 donkey, 19 monkeys.

Bovine Contagious Diseases.—Rinderpest accounted for 224 deaths among milk cattle and calves of Crater and Tawahi.

Preventive Measures.—The epidemic was controlled by the following precautionary measures being taken :—

1. All infected animals were segregated.
2. Stables were regularly disinfected.
3. Cattle were inoculated with anti-Rinderpest serum.
4. Carcasses were buried and the movement of horned cattle was controlled.

&Co. Brit., Colonial Office C-S (1947) 1948 M241 Aden

in the history of the Prison. The daily average for the month was 434. This imposed a great strain on the prison resources in accommodation, equipment and staff.

Most of the prisoners, about 80 per cent., were from the Yemen and the Protectorate, the rest being local men.

Juvenile convicts under the age of 15 were as far as possible kept apart from the adults and were provided with separate sleeping accommodation. Sixty-four juvenile convicts were admitted during the year compared with 73 in 1946. They do not form a serious problem, so far as the prison is concerned, for at any one time there are not more than 3 or 4 of them.

Cane work, both new and repairs, of various types, shoe-repairing, sports-net making, re-stringing of tennis racquets, and gardening were taught to some of the long-term prisoners.

The health of the prisoners was good on the whole, there being no outbreak of any serious illness. The sickness rate was, however, higher than in 1946. The main prevailing diseases were scabies, dermatitis, ulcers, influenza, venereal diseases and malaria—the last two being contracted before admission to the Prison.

A Medical Officer from the Civil Hospital attends the Prison Dispensary every morning and gives necessary treatment to the sick. Those needing in-patient treatment are admitted into the Civil Hospital.

There were no deaths during the year.

There is no system of probation or of welfare for discharged prisoners in Aden at present, but the matter will receive the attention of Government as soon as a Welfare Officer is appointed.

Chapter 10: Public Utilities and Public Works

Both the waterworks and the electricity supply to the Colony are publicly owned and form part of the Public Works Department. A brief description of each is given below.

WATERWORKS

Prior to 1928 the domestic water supply of Aden was almost wholly derived from condensed sea water. From 1924 to 1928 experimental boreholes were sunk at Sheikh Othman and potable water was found in two thin layers of sand and gravel at 178 and 208 feet respectively below the surface.

Since that date 10 additional boreholes (including one in 1947) have been sunk and pumping plant installed, and the table on page 44 shows the increase in the consumption of water over the years:

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	1936 Million gallons	1941 Million gallons	1947 Million gallons
Total water raised from boreholes	205	353	578
Water consumed by civil population	45	115	181
Water sold to shipping	18	65	52
Water consumed by military	25	96	120
Water used in gardens	76	52	114
Other purposes, including water unaccounted for	41	25	111

As no census was taken in Aden between 1931 and 1946, reliable figures of the average daily consumption per head of the civil population for 1936 and 1941 cannot be given. The figure based on the 1946 census is 93 gallons per head per day.

The water is pumped direct from the boreholes into reservoirs, and gravitates through a 15-inch diameter pipeline 7 miles in length into the Isthmus, where it is pumped into service reservoirs, and distributed to the various parts of the Colony by gravitational mains, of which there are over 26 miles of 2½-inches diameter and above. The total capacity of the reservoirs in the Colony is 2,850,000 gallons.

All supplies are metered, and at the end of 1947 over 4,400 domestic water meters were in use. Four hundred and one new connections were given in 1946.

The cost of water to the general public is 4 annas less 10 per cent. per 100 gallons (approximately 3*s.* 3*d.* per thousand gallons). The revenue derived from the sale of water during 1947 was Rs. 6,84,250 (£51,318) and the total expenditure Rs. 5,98,970 (£44,923).

Seven per cent. of the total water used by the general public is supplied free of charge from 26 standposts erected in various parts of the Colony.

Although the water at source is of a very high standard of purity bacteriologically, it is automatically chlorinated to combat any possible pollution through dust or any other agency.

SEWAGE DISPOSAL

The water-works department is also responsible for the construction and maintenance of all sewers in the Colony. All sewage discharges into the sea through five separate sea outfalls taken to just below low-water mark. Except at Sheikh Othman, where small primary settling tanks have been constructed there are no sewage disposal works.

In order to minimise the fouling of the harbour and beaches all water-closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquefied.

Government have approached an eminent London firm of consulting engineers, with a view to the preparation of a complete sewerage scheme for the Colony.

The cleansing of sewers is carried out by the Public Health Department.

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ELECTRICITY SUPPLY

Generation

Electricity (as a public utility) was first introduced into Aden in 1946, when the power-house was completed, and three 330-K.V.A. generating sets with oil-fired steam-boilers and necessary auxiliary plant erected.

The station was later enlarged, and at the end of 1947 three turbo generators of 1,200 K.W., 1,200 K.W., and 750 K.W. respectively, with boilers of a steaming capacity of 47,000 lb. per hour, were installed. In addition, two 250-K.W. generators powered by diesel engines, installed underground during the war by the Admiralty as an emergency measure, are available in an emergency, and were used during part of the summer of 1947, when the military plant was out of action.

The supply is generated at 6,600 volts pressure and stepped down by means of transformers to 400 volts. All domestic supplies are at 230 volts.

The average load in the Station during the year was 888 K.W.H. The highest average daily peak load (during the summer months) was 1,008 K.W.H., and the highest peak load was 1,400 K.W.H.

Owing to the large increase in population (who are incidentally becoming very "electricity minded") in the Colony, the existing plant is insufficient to meet all demands, and the possible construction of a complete new power station is under consideration. Until such plant is erected and functioning, or additional boiler plant is installed, it will be necessary to restrict the number of new connections to the supply mains.

A new canal for intake water was completed during the year. This was taken below low-water mark, and to reduce the influx of seaweed a rotary screen was erected.

Distribution

Distribution, both high and low tension, is mainly by overhead lines. These will be replaced eventually by underground cable, and some conversion was made during the year under review.

Three new sub-stations of 200 K.V.A., 200 K.V.A., and 50 K.V.A. respectively were constructed, and the existing sub-station at Wightwick Gardens, Crater, was increased in capacity from 200 to 250 K.V.A.

A master clock was fitted in the power station and electric clocks are now being used all over the Colony.

General

The Electricity Department carried out the installation and maintenance of all electrical fittings in Government buildings. Owing to the demand being greater than the supply, only essential buildings were wired and connected to the mains.

The maintenance work, however, was very heavy, but in spite of the difficulties arising from lack of skilled labour and shortage of materials, most demands were met.

The cost of electricity to the general public is at the rate of 3 annas

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buildings, are nearing completion. Special attention is paid to cleanliness and sanitation. The existing buildings now provide for the separation of juveniles and of first offenders from habituals.

During the first ten months of the year the average prison population was 60 per cent above that of the corresponding year. This increase was mainly due to an influx of prisoners convicted during the December riots among the Jews and Arabs. The prison population was doubled, and during the first two months it was so high that the dormitories and cell accommodation was subjected to severe strain, and for a time there was unavoidable overcrowding. Effective steps were taken by the Public Works Department to provide additional accommodation and this, with the release of many of the rioters on completion of their sentences, reduced the overcrowding and conditions became normal. The daily average number during the year was 330. Throughout the period the discipline was well maintained.

A notable feature of the year was the introduction of two additional industries—weaving and tailoring—and very remarkable progress was made, particularly in the weaving industry. Twelve hand pit looms producing convict and other kinds of cloth, hessians, counterpanes, sheets, etc.; upright looms producing designed pile carpets; ground looms producing carpets and durries, etc., were in operation. It is hoped to encourage and expand this particular industry, the principal aim being to give prisoners a trade in hand to rehabilitate themselves on their release in order to become good citizens.

The health of the prisoners was good on the whole, there being no outbreak of any serious illness. The sickness rate was, however, higher than that for the past year. Many of the prisoners certified as sick and unfit for work were suffering from venereal diseases contracted before admission to Prison.

A Medical Officer from the Civil Hospital attended the Prison dispensary and gave necessary treatment to the sick. Prisoners needing in-patient treatment were kept in the Prison Hospital. Cases needing immediate attention were admitted to the Civil Hospital. There was one death in the Civil Hospital from natural causes.

There is as yet no discharged prisoners' aid society nor an after-care organization.

Chapter 10: Public Utilities and Public Works

365 Both the waterworks and the electricity supply of the Colony are publicly owned and form part of the Public Works Department. A brief description of each is given below.

WATER AND DRAINAGE

365 312 The water supply of Aden is drawn from 10 boreholes situated in and around Sheikh Othman Gardens. The total water raised during 1948 was 383,414,000 gallons, an increase of 1·3 per cent on 1947. This represents an average daily supply of 1,805,000 gallons and, taking the popu-

R.G.L. Brit., Colonial Office C-3 (1948) 1950 MMI Aden M M]

lation of Aden as in 1911, gives an average daily consumption, after deducting water to shipping, gardens and military, of 6·9 gallons per head. The average daily consumption per head for all purposes is 20 gallons.

The following table gives details of the water used in Aden during the four years 1945, 1946, 1947 and 1948.

Details	1945 Million gallons	1946 Million gallons	1947 Million gallons	1948 Million gallons
1. Total water raised at bores	549·2	594	577·8	583·4
2. Water to civil population through house connections	134	144·5	160·8	180·5
3. Total water sold to military	174·3	143·7	129·2	111·5
4. Water sold to shipping in port	50·4	43·9	52	53·4
5. Water sold at filling stations	10·8	9·5	7·7	5·4
6. Water used for gardens	83·6	143·3	114·2	95·3
7. Total water supplied free of charge (including gardens, flushing, free stand-posts, fire-fighting etc.)	114·4	170	140·6	134·2
8. Water unaccounted for or percentage loss	13·65%	13·8%	16·5%	17·9%

Pumping Plant. The whole of the pumping plant is in good mechanical condition. The maximum quantity of water, assuming all pumps to be in perfect working order, which can be raised from the bores daily is 2,512,000 gallons.

Boreholes. Six new boreholes in Sheikh Othman Garden have been sunk during the year, five by Messrs G. Stow & Co. and one departmentally. This will give an additional 1,200,000 gallons of water per day when the pumps, which are on order, have been installed.

Reservoirs. The total capacity of the reservoirs is 2,965,200 gallons.

Distribution. The total length of water mains replaced was 7,374 linear feet, mostly 3-inch cast-iron pipes. The total length of new mains laid were 7,730 feet of 4 inches or less in diameter, and 11,703 feet of 6 inches and over.

Water Meters. Further new water meters were received during 1948, and it was found possible to give 968 new connections, compared with 336 in 1945, 261 in 1946 and 401 in 1947.

The total number of meters now in use is 5,313.

Fire Hydrants. The total number of fire hydrants now installed in the Colony is 169. All these are examined, tested and cleaned every four months. This ensures that they are in complete working order in any emergency and it also assists in flushing out the mains.

Consumers. The number of consumers on the registers at the end of 1948 was 5,307, an increase of 881 on that recorded on the same date in 1947.

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Fire Standposts and other Free Supplies. During 1948, 124,274,000 gallons of water representing 21·2 per cent of the total water raised was issued free of charge for fire-fighting, gardens, free standposts, Public Works etc. 13,965,000 gallons of water were issued free of charge to the general public from the 32 free standposts now erected in the various points of the Colony.

Sterilisation of Water. The whole of the water (except that supplied to Sheikh Othman gardens) is chlorinated before distribution, and the many bacteriological analyses made during the year proved that the water was eminently fit for domestic consumption.

Drainage Works. This covers the maintenance of the whole of the sewerage system in the Colony, with the exception of cleansing which is carried out by the Public Health Department.

New Work. The expenditure on new works during 1948 was Rs. 265,517. The principal items being shown below:

	Rs.
1. New house connection and minor extension to water mains	57,351
2. Minor drainage works	8,435
3. Sinking new boreholes at Sheikh Othman	74,000
4. New distribution mains	51,195
5. Store room at Isthmus Pump House	2,770
6. Quarter for pump cleaner	3,251
7. Extension of Maalla drainage	12,000
8. Two flushing tanks	3,576
9. New 9-inch water main from Sheikh Othman to Khormaksar	13,915

Finance. The total receipts for 1948 were Rs. 709,546 and the expenditure Rs. 653,896.

The total expenditure on the water supply since its inception to 31st December, 1948, is Rs. 7,024,204 and the amount received from the sale of water during the same period is Rs. 8,349,272.

SEWAGE DISPOSAL

The Waterworks Department is also responsible for the construction and maintenance of all sewers in the Colony. All sewage discharges into the sea through five separate sea outfalls taken to just below low-water mark. Except at Sheikh Othman, where small primary settling tanks have been constructed, there are no sewage disposal works. In order to minimise the fouling of the harbour and beaches all water-closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquefied.

Government have approached an eminent London firm of consulting engineers, with a view to the preparation of a complete sewerage scheme for the Colony.

The cleansing of sewers is carried out by the Public Health Department.

6:Gt. Brit., Colonial Office G-3 (1948) 1950 MM1 Aden MM1

ELECTRICITY SUPPLY

Generation

Electricity as a public utility was first introduced into Aden in 1926, when three 330 K.V.A. steam generating sets with oil-fired boilers and auxiliary plant were erected.

The main section plant now comprises two turbo-alternators of 1,200 K.W. capacity and one turbo-alternator of 750 K.W. capacity, generating at 6,600 volts 50 cycles, together with boiler plant comprising one boiler of 18,000 lb. per hour capacity, one boiler of 12,000 lb. per hour capacity, and two boilers of 6,000 lb. per hour capacity, together with auxiliary plant. In addition, two 250-K.W. diesel-driven alternators, generating at 440 volts, installed in a stand-by station, were periodically used to augment the supply. Due to the heavy load in the summer period, the supply is also increased by the running of Air Ministry plant. Owing to load difficulties, the use of power by commercial industries is not permitted between 1800 and 2200 hours daily. The water-pumping load moreover is reduced to a minimum during this period.

The average load of the main station during the year was 982 K.W. and the maximum load 1,600 K.W., the station load factor for the year being 62 per cent.

The total units generated during the year were 8,599,899 of which 15 per cent were used in the station itself.

A 200-K.W. diesel-driven alternator is being installed for stand-by purposes at the bore wells, Sheikh Othman.

There was a very appreciable reduction in the price of fuel oil during the year.

Plans and contract documents for the proposed new power station are being drawn up by the consulting engineers.

Distribution

The H.T. (6,600 volts) and the L.T. (400 volts three phase and 230 volts single phase) distribution systems comprise both overhead lines and underground mains.

Satisfactory progress was made in the change-over from overhead lines to underground cable in both systems. All modifications to the systems in the Fortress were carried out by underground cable.

Major modifications, incorporating street lighting, were made to the L.T. system at Sheikh Othman.

Maintenance work on the existing mains within the Fortress was, as last year, heavy. Modifications to street lighting were also undertaken, priority being given to the back areas.

The Electricity Department was responsible for the electrical installations in all newly-constructed Government premises. In addition, many electrical installations in other Government buildings were completely renewed. Maintenance work in Government premises is still very onerous, due to lack of materials and labour during the war period.

New sub-stations were constructed and commissioned at Tawahi,

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Hedjuff (Lake Thomas), Isthmus (pump house), Khormaksar (new housing estate).

Staff

Difficulty was experienced in obtaining qualified shift engineers and artisans, although many more applied for posts as apprentices in the department. The first to complete his five years' apprenticeship was sent to Kenya to gain further experience with the East Africa Power Co. There was no shortage of unskilled labour or clerks.

General

A Tannoy loud-speaker system was installed for the use of the Information Office at Tawahi, Hedjuff, Maalla and Crater.

The cost of electricity remained the same as in 1947, i.e. at the rate of 5 annas per unit for lighting and fans, and 2 annas per unit for refrigerators. The power rates for industrial purposes vary with the amount used, and whether or not condensers are fitted to the motors. The average rate, however, was approximately 2·57 annas per unit.

Revenue from all sources was Rs. 12,81,649. Accurate figures of expenditure cannot be given at present, as the Crown Agents accounts for the latter part of the year have not yet been received.

Consumers at the end of 1948 numbered 3,412 compared with 3,069 in 1947, with 200 prospective consumers awaiting connections and a further 560 having applied for permission to instal wiring in their premises.

PUBLIC WORKS

Maintenance of Buildings

Government own most of the buildings used for public purposes in the Colony, and a large staff is maintained by the Public Works Department in maintaining them in a proper state of repair, and carrying out minor improvements.

New Buildings

Practically all new Government buildings are constructed departmentally by direct labour, and the principal works completed in 1948 were:

	£
Quarters	
6 Houses for Senior Government Officials	14,000
Education	
Boys' Primary School, Tawahi	8,600
Class-room and administration office, Secondary School, Crater	9,090
Three additional class-rooms, sports shelter and tuck shop at Boys' School, Sheikh Othman	2,250
Social Welfare	
Working-class dwelling, Sheikh Othman	19,100
Aidrus Valley Housing Scheme	7,150

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There is one prison only and no camps. The prison buildings are enclosed in a spacious and airy compound, surrounded by a high stone wall and they consist of an administration block and widely spaced and well-ventilated dormitories, cells, a kitchen and a hospital.

There are six superior cells exclusively for the accommodating of "A" and "B" Class prisoners. Special attention is paid to cleanliness and sanitation and a high standard in both is maintained.

The general state of health of all prisoners has been satisfactory. There was no outbreak of any serious illness. Venereal diseases, contracted before admission to the prison, were common among the prisoners.

A Medical Officer from the Civil Hospital attended the prison dispensary daily and was assisted by a full-time hospital assistant. Prisoners reporting sick were treated at the prison hospital, but cases needing immediate attention were admitted to the civil hospital.

There were six deaths from natural causes, four in the civil hospital and two in prison. Due to the lack of accommodation at the civil hospital, cases of pulmonary tuberculosis were treated in the prison sick-bay. Of the four cases, two died, one was cured and one is making a steady progress.

The official and non-official visitors of the Prison Board visited the prison regularly. His Excellency the Governor paid four visits to the prison during the years under report. All prisoners were given complete freedom of access to the visitors and every opportunity to register complaints or to ventilate any grievances.

There is, as yet, no system of probation or of welfare for discharged prisoners.

Chapter 10: Public Utilities and Public Works

The water and electricity supply services are publicly owned and are operated by the Public Works Department.

WATER AND DRAINAGE

Prior to 1928 the domestic water supply of Aden was derived almost entirely from condensed sea water. From 1924 to 1928 experimental boreholes were sunk at Sheikh Othman and potable water was found in two thin layers of sand gravels at 136 feet and 208 feet respectively below the surface.

Since 1928 fifteen additional boreholes (including five in 1948) have been sunk, and the following table shows the increase in consumption:

	1936	1941	1949	1950
	(all figures in million gallons)			
Total water raised from boreholes	205	353	680	711
Water consumed by civil population	45	115	208	235

1; Gt. Brit., Colonial Office G-8 (1949-50) 1951 HD11 Aden

Water sold to shipping	18	65	69	73
Water consumed by Military ..	25	96	139	138
Water used in gardens ..	76	52	141	142
Other purposes including water unaccounted for	41	25	103	103

The water is pumped direct from the boreholes into reservoirs and gravitates through a 15 in. diameter pipeline 7 miles in length into the Isthmus, where it is pumped into service reservoirs and distributed to the various parts of the Colony by gravitational mains, of which there are over 28 miles of varying diameter from 9 in. to 2½ in. The total capacity of the reservoirs in the Colony at present is 2,965,000 gallons. A new 3-million-gallon reservoir above the Main Pass is under construction and will be completed in 1952.

All supplies are metered and at the end of 1950 over 6,100 domestic water meters were in use. Six hundred and thirty-four new connections were given in 1949, and 674 in 1950.

The cost of water to the general public is 4 annas less 10 per cent per 100 gallons (approximately 3s. 3d. per thousand gallons). The revenue derived from the sale of water during 1949 and 1950 was Rs. 16,15,649 (£121,173) and the total expenditure was Rs. 12,21,895 (£91,642).

Six per cent of the total water used by the general public is supplied free of charge from 32 standposts erected in various parts of the Colony.

Although the water at source is of a very high standard of purity bacteriologically, to combat any possible pollution through dust or any other agency it is automatically chlorinated.

The maintenance and provision of new sewers is the responsibility of the Public Works Department, but the cleaning of sewers is carried out by the Public Health Department. All sewage discharges into the sea through five separate outfalls extending to just below low water mark. At Sheikh Othman, small primary settling tanks have been constructed, but there are no sewage disposal works.

In order to minimise fouling of the harbour and beaches, all water closets are required to discharge into the sewers through a septic tank, where all solid matter is first liquified.

ELECTRICITY SUPPLY

Electricity as a public utility was first introduced into Aden in 1938, when the power house was completed, and three 330 kva generating sets with oil-fired steam boilers and necessary auxiliary plant were erected.

The station was subsequently enlarged, and at the end of 1947, three turbo generators of 1,200 kw., 1,200 kw. and 750kw. respectively, with boilers of a steaming capacity of 47,000 lb. per hour were installed. In addition, two 250 kw. generators powered by diesel engines are available in an emergency.

The installation of the stand-by diesel generator (250 kw.) at Sheikh

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Othman was completed and it has already proved its worth in maintaining the water supply during maintenance work on the electric supply lines.

The Air Ministry stand-by station at Crater-ways is now in commission and is in a position to relieve the Department of the load in the areas of Bureath Hill, Gold Mohur, R.A.F. Hospital and Tarshyne; this will make available more electricity for civilian needs during the summer period.

The Air Ministry Directorate General of Works stand-by generators carry most of the military load at peak hours, and their co-operation is much appreciated.

The existing generating plant, although now showing the results of continuous loading is still holding out under a heavy maintenance programme.

The supply is generated at 6,600 volts pressure and stepped down by means of transformers to 400 volts. All domestic supplies are at 230 volts.

The average load in the station during 1949 was 1,095 kwh. and during 1950 was 1,143 kwh. The peak load reached 1,710 kwh. in 1949 and 1,830 kwh. in 1950.

Consumers at the end of 1950 numbered 4,800 compared with 3,412 at the end of 1949. There are still 1,000 waiting for supply.

The following table shows electricity generation and revenue in 1948, 1949 and 1950:

	1948	1949	1950
Units generated ..	8,599,899	9,409,830	10,063,080
Units sold	7,108,428	7,987,886	8,144,568
Station load factor ..	—	64·8%	62·0%
Total revenue from sales of current	Rs. 13,04,303	Rs. 14,33,887	Rs. 15,10,630

Owing to the large increase in population, it has become necessary to erect a new power station and the necessary orders for two 5,000-kw. generators and two 60,000-lb. boilers, have already been placed. In the meantime the replacement of feeder lines is being carried out to a plan to tie in with the new station and so avoid as much delay as possible when the new station goes into production.

Plans have been agreed for a development of the high tension distribution system, which is being steadily brought into commission beginning with Crater where 40 per cent of the peak load is consumed.

In the meantime the distribution system has been improved by laying underground cables in the Tawahi and Steamer Point areas, with a new sub-station for the latter. Further sub-stations are being put into commission in Crater. Underground cables have also been laid in Crater and Maalla and will considerably improve distribution in these areas. The removal of the old overhead lines will improve the localities and avoid the dangers attendant on this method of distribution and also release land for building purposes.

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The street lighting in the Crescent and Secretariat areas has been improved by the provision of fluorescent lighting of the latest type. In other areas the street lighting has been extended.

The cost of electricity to the general public is 5 as. per unit for lighting and fans, and 2 as. per unit for refrigerators. The power rates for industrial purposes vary with the amount used and whether or not condensers are fitted to the motors. The average rate however is approximately 2·87 annas per unit in 1949 and 2·95 annas per unit in 1950 (an anna is 1·125 pence).

PUBLIC WORKS

New Buildings

The principal Government works or buildings completed in 1949 and 1950 are listed below:

By Contractors

24 houses in the Aidroos Valley Crater.
24 quarters for Police, Khormaksar.
New Police Station, Khormaksar.
2 primary schools for girls, Crater.
Primary school for boys, Crater.
3 expatriate and eleven staff quarters for Aden College.

By the Department

160 working-class houses, Steamer Point.
New Customs, Salt and Excise Office, Steamer Point.
9 houses for senior Government officials, Khormaksar.
Tuberculosis ward for 40 patients, Civil Hospital.
New record room and upper storey, Treasury Office.
Conversion of the marine craft unit camp into lines for the coal coolies, Maalla.
Upper storey over Barrack Nos. 2 and 3 Armed Police Lines, Crater.
Technical College Workshop, Maalla.
Extension to both boys' and girls' primary schools, Sheikh Othman.
Four extra class rooms, Boys' Primary School, Maalla.

Architect's Department

During 1950 the Architect's Department was strengthened by the arrival of an Assistant Architect from the United Kingdom and an Architectural Draughtsman from India, but shortage of trained staff is still a problem.

Schemes have been prepared and are now under consideration by Government for extensions to the Maternity Clinic, Crater, the new telephone exchange building, Maalla, and the building for the Government printing press, Tawahi. The Surveyor has carried out a large number of surveys in various parts of the Colony connected with proposed future building operations, but he too is handicapped by lack of staff.

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697 Officer from the Civil Hospital attends the prison dispensary daily. There is a full-time hospital assistant to assist the doctor.

Education

Rehabilitation and education of prisoners is difficult to achieve; most of them are illiterate and very few are serving long sentences. An attempt is made to give them rudimentary lessons in English and Arabic. Those who can read either English or Arabic are able to borrow books.

Training

All convicted prisoners are put to work and are trained in one of the following crafts: cane work, weaving, carpet making, tailoring and carpentry. In addition, the prisoners are employed on stone-breaking, shoe-repairing, gardening, cooking, washing and water drawing.

An earnings scheme has been recommended by the Board of Prison Visitors and the question of its introduction is under consideration.

There is no extra-mural work in operation at present.

Remission System

A convicted prisoner sentenced to imprisonment for a period exceeding one month may by industry and good conduct earn a remission of up to one-third of his sentence.

After-Care

No after-care arrangements for prisoners on their release as yet exist.

Chapter 10: Public Utilities and Public Works

WATER SUPPLY

365 [312] The water supply is obtained from bore-wells situated at Sheikh Othman, some eight miles from the principal industrial and residential areas. No treatment other than chlorination is required, though the water has a rather high percentage of dissolved salts.

The average daily consumption is about two and a half million gallons. The following figures show the increase in the consumption of water between 1950 and 1952:

	1950 *Million gallons*	1951 *Million gallons*	1952 *Million gallons*
Water raised from boreholes .	710.5	767.0	901.9
Water consumed by civil population	235.0	264.0	293.6
Water sold to shipping . .	73.0	82.3	88.7
Water consumed by Military .	158.3	189.0	227.9
Water used in Public Gardens .	142.9	56.9	28.5
Other purposes (including water unaccounted for) . .	101.3	174.8	263.2

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A new three-million gallon reservoir and a new pump-house will be completed in 1953.

The waterworks are operated by the Public Works Department.

Revenue derived from the sale of water during 1951 and 1952 was £733,740 and £866,900 and expenditure was £756,930 and £864,035 respectively.

ELECTRICITY

A public supply of electricity was instituted in 1926 and the plant consisted initially of three 330 kVA. turbo-generating sets with oil fire boilers. By the end of 1947 various extensions had taken place and the installed capacity consisted of two 1,200 kW. turbo-generating sets and one 750-kW. set, with corresponding boiler capacity. In addition, two 250 kW. diesel sets were installed in an adjacent power station. This capacity had not been increased by the end of 1952 and demand has exceeded the available capacity of the plant for some time. The Electricity Department provides supplies to both civilian and military consumers, but in recent years it has been necessary to operate military standby plant during peak periods.

The following are the particulars of the present supply :

Generation and HT distribution : 6,600 volts, 3 phase, 50 cycles.
Local distribution LT supply : 400/230 volts, 3 phase, 4 wire.

The following are the particulars of generation, revenue and consumers for 1951 and 1952 :

Year	*Units Generated*	*Total Revenue*	*Number of Consumers*
1951	12,175,971	£151,623	5,281
1952	14,167,635	£231,244	6,131

A new power station is under construction which will comprise initially two 5,000-kW. sets with the necessary boiler capacity. Work is expected to be completed early in 1954.

PUBLIC WORKS

Buildings

Contractors have completed or are in the process of building the following offices and quarters :

10 Experimental Class 'C' houses, Hedjuff.
4 houses for subordinate staff, Electricity Department.
6 erectors' quarters, New Power Station.
10 servants' quarters, Officers' Houses, Khormaksar.
4 houses for Government officers, Khormaksar.
3 blocks of 'A' Class flats, Maalla.
15 houses for subordinate staff, Crater.
Aden College (see Chapter 7).
40 sweepers' quarters, Crater.
8 offices for the Income Tax Department.
New Printing Press Building.
Extensions and additions to the Maternity Clinic, Crater.
Conversion of the old Protectorate College to a block of 4 flats.

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NEW POWER STATION UNDER CONSTRUCTION IN THE COLONY

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STREET SCENE IN THE COLONY